

# Transdisciplinary Science and Translational Prevention Program



Genetics, biology, and the social and physical environment all influence a person's ability to function physically, socially, and psychologically. How these factors combine to interact with one another can affect an individual's behavior and response to preventive and treatment interventions. Individual differences in these factors contribute to variations in behavioral outcomes and the ability to benefit from interventions. RTI International's Transdisciplinary Science and Translational Prevention Program (TSTPP) seeks to identify the mechanisms underlying both behavioral problems and intervention intractability. Ultimately, this research will inform prevention and treatment practices and policy, resulting in significant cost savings and improved quality of life.

## Program Overview

TSTPP researchers are working to identify the underlying mechanisms in behavioral disorders by applying a transdisciplinary, translational model designed to transfer knowledge from basic science to practice and policy.

This model characterizes pathways to various behavioral outcomes on the basis of social, environmental, genetic, neurobiological, physiological, and psychological factors that interactively influence behavior throughout development.

Our overriding goal is to answer the question: What works best, for whom, why, and under what circumstances? Findings will support the design of more effective interventions and policies. Development, implementation, and refinement of these interventions in different populations and settings will result in a return to the basic sciences, or backward translation, allowing for further investigation of poor therapeutic outcomes for subgroups or individuals. Feedback loops, which are intrinsic to the model, will incorporate what is learned about successes and failures at each stage. Ultimately, our strategies

will address conditions that underlie the amenability of individuals or subgroups to conventional approaches, leading to improvements in intervention efficacy and effectiveness, and development of novel programs. Through a transfer of knowledge from science to practice, public health strategies and policies will be increasingly based on scientific evidence, thus, will be more effective and exert a broader impact.

## Research Expertise

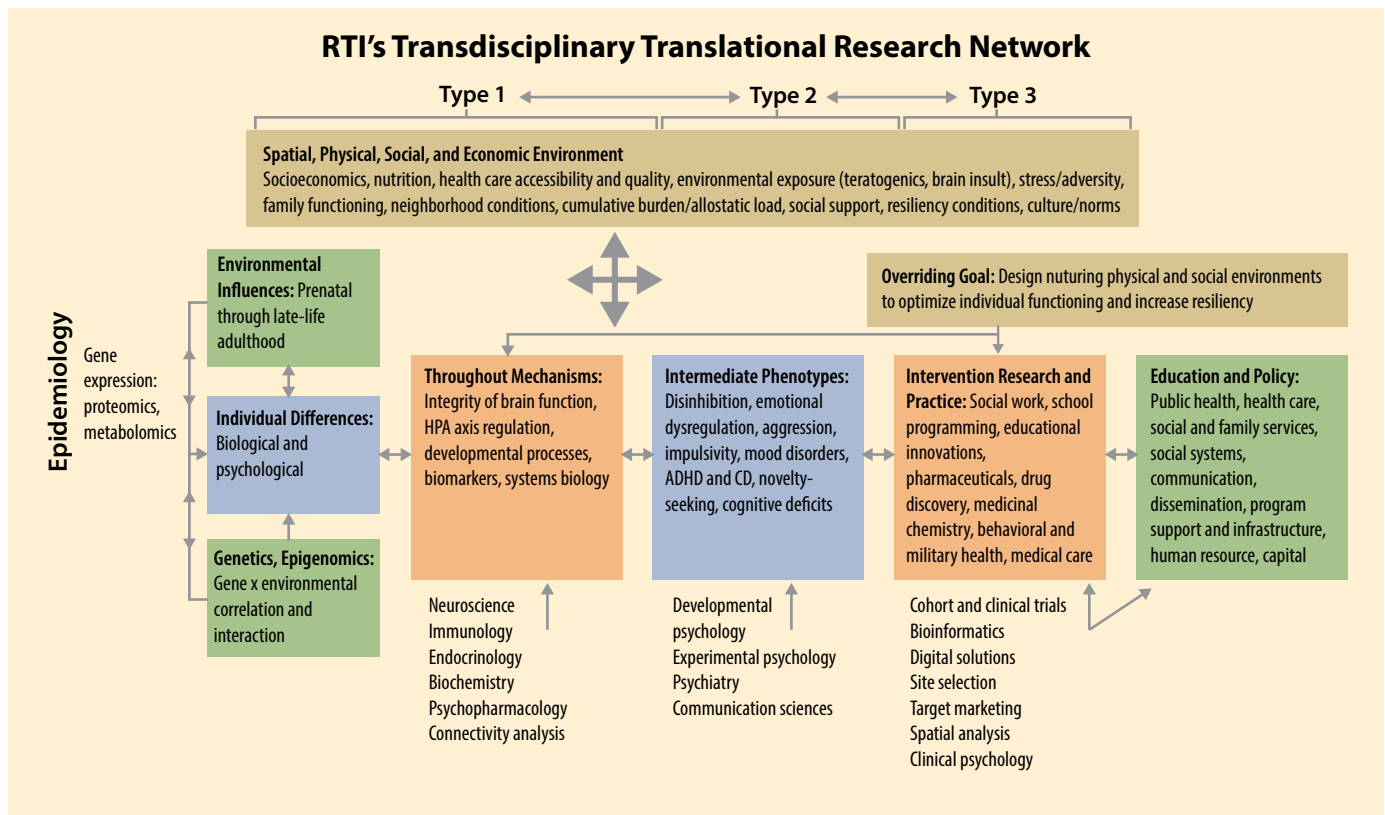
The study of complex human behavior must take into account a network of heterogeneous components that interact nonlinearly and change dynamically over time to give rise to emergent behavior. For this reason, research that employs a "systems" approach—combining a transdisciplinary perspective with multilevel analyses and the translation of basic science to practical application—is ideal. It also requires communication and integration among many disciplines, from genetics and socio-environmental sciences to the behavioral sciences and, finally, public policy.

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The disciplines and capabilities across RTI have potential to further inform this line of translational research, as shown in the figure below. The TSTPP connects RTI investigators who are conducting relevant work at various points along this translational pathway, capitalizing on existing capabilities and resources. By mapping the model's framework to various RTI projects currently engaged in this work, it is possible to assess the depth and breadth of our capabilities in each

domain. Potential for collaborative work within RTI can then be characterized where overlap or adjacencies occur, and possibilities for joint research can be explored.

RTI's investment in research that has such broad applicability for individuals, neighborhoods, health care providers, community leaders, educators, and regional policy makers will ultimately generate extraordinary savings in cost as well as improvements in the quality of life for many people.



**Type 1 translation:** Applies basic science discoveries to the development and preliminary testing of interventions

**Type 2 translation:** Enhances the adoption, implementation, and sustainability of evidence-based or scientifically validated interventions by service system

**Type 3 translation:** Reliably delivers science-based interventions to all recipients in all settings

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